



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

MCAP

Nick Caruso, National Automotive Center

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Mobile Computing Application Platform



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- Vehicle to Vehicle (V2V) Collision Avoidance
 - Fault detection of failed transponder (device)
 - Communication failure (network)
 - “Hacker”
- Examples:
 - Two or more vehicle entering a common intersection from different directions
 - Leader-follower convoy
 - Traffic signal pre-emption



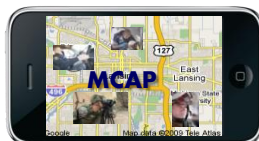
Sensing Technology

Safety Considerations

Connected, Autonomous Vehicle

Infotain./ Telematics

Also, Safety Critical Systems, Wireless Technologies, and Ad-hoc vehicular systems



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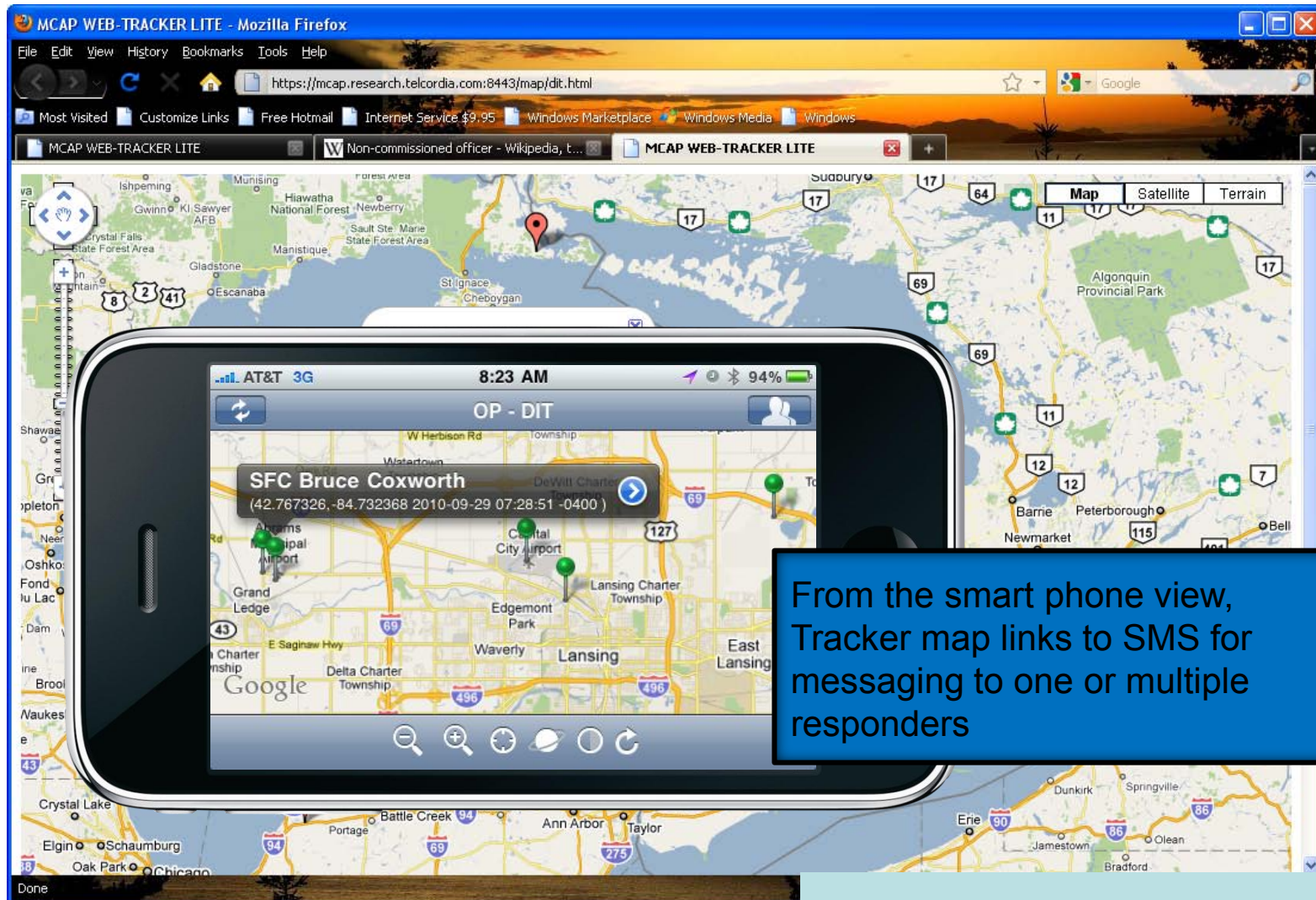


Back -up



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MCAP Tracker: Web (for EOC Display)



Vehicle Health Assessment

- Vehicle vital signs - talking on the CAN bus
- Assess ability of vehicle to execute response



Vehicle Asset Tracking and Control

- Assessment of additional capability to serve mission
- Adding functionality for remote control of vehicle assets

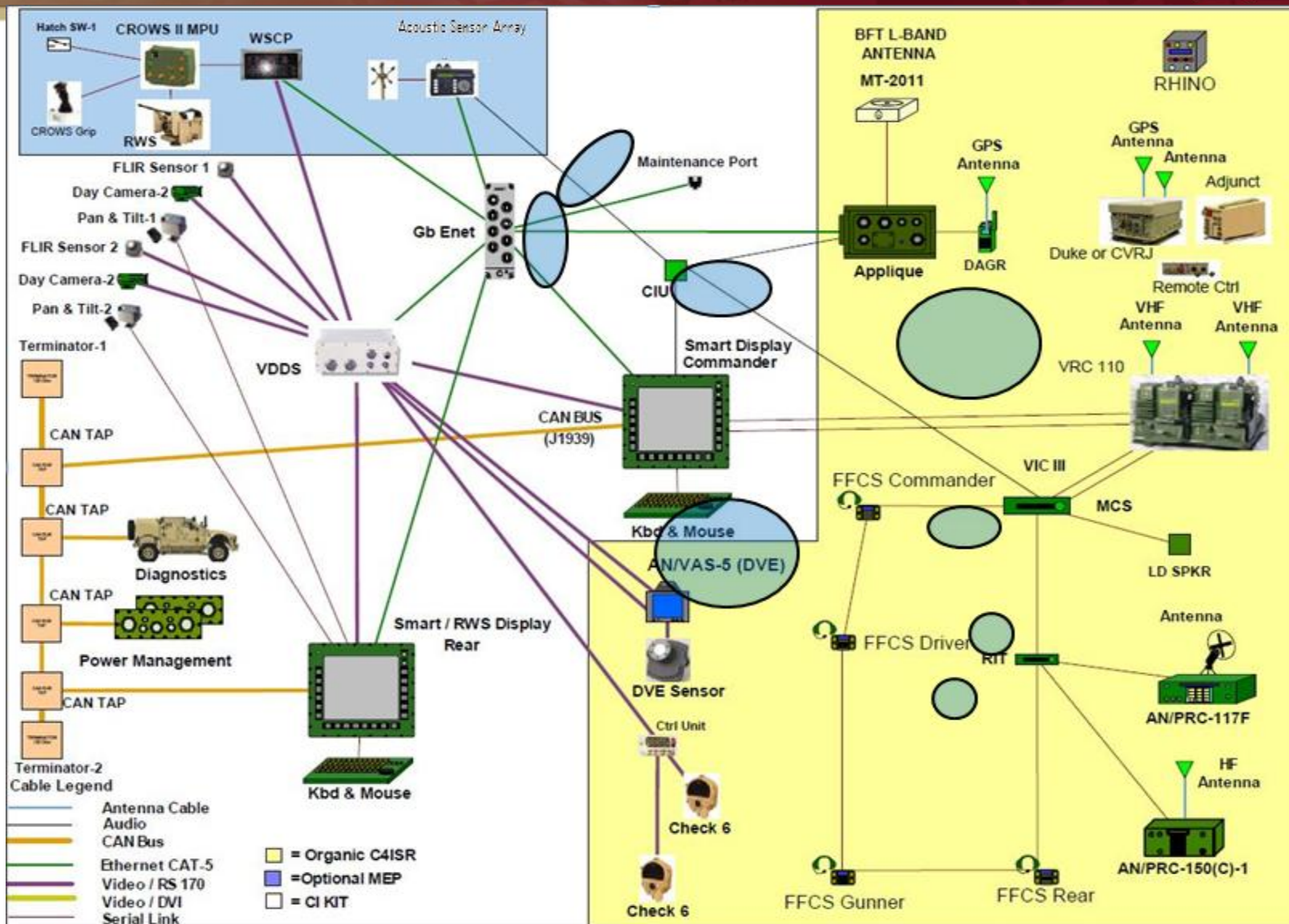
Vehicle to X

- V-2-V Collision detection and avoidance
- V-2-Traffic signals and control, navigation
- V-2-I for asset sharing



Vehicle as a Communications Cond

- More power / longer range to back-end
- More power / longer range from dismounted Soldiers / Responders
- Alternate schemes for comm denied to back end including satellite, hardwired, portable cell towers





Technology Development and Transition



- **Develop / Transition Advanced 360 SA Capabilities**

- For Now, Develop and Integrate Initial 360 SA Capability w/ COTS Items
- Transition Relevant Technologies Upon Input from Soldiers in the Field

- **Develop / Transition Autonomy to Sensor Inputs**

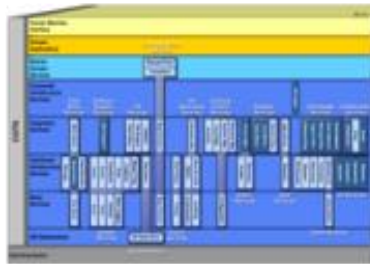
- For Now, Simply Feed Sensory Data to Soldier for Direct Analysis
- Transition Autonomous Technologies that Improve Soldier Cognition and Decision-Making
 - Slew-to-Cue, Target / Obstacle Detection, Road Edge Detection, etc.

- **Develop / Transition Advanced Sensors Upon Platform**

- Current Focus is on Visual (Daytime, IR) Sensors
- Transition New or Upgraded Sensors as Requirements Warrant
 - Laser Range Detectors, Millimeter Wave RADARs, etc.
 - Upgraded Cameras, Displays, Digital Backbone Architecture, etc.

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UGV Technology Development and Integration



**Demonstrating UGV Control
Utilizing SESCOE and
Battle Command Software**



**Autonomous Navigation
System (ANS) and RSTA**



**Hardware and
Software
Integration**

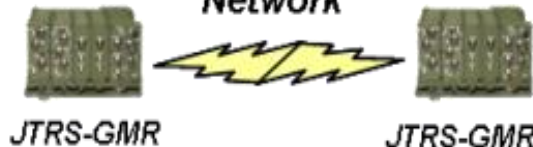


**Integrated Computer
System and Vehicle
Management System**



UGV Platform

**FCS Like Comms
Network**



**MGV With Embedded
UGV Control**

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Force Projection

- Fuel & Water Distribution
- Force Sustainment
- Construction Equipment
- Bridging
- Assured Mobility Systems

Combat Vehicles

- Heavy Brigade Combat Team
- Strykers
- MRAPs
- Ground Combat Vehicles (Future)



Tactical Vehicles

- HMMWVs
- Trailers
- Heavy, Medium and Light Tactical Vehicles



Robotics

- Technology Components
- Demonstrators
- Military Relevant Test & Experimentation
- Transition & Requirements Development



TARDEC Engineers Provide Cradle-To-Grave Engineering Support

System & Simulation Integration Laboratories



Survivability Laboratories



Physical Simulation Laboratories



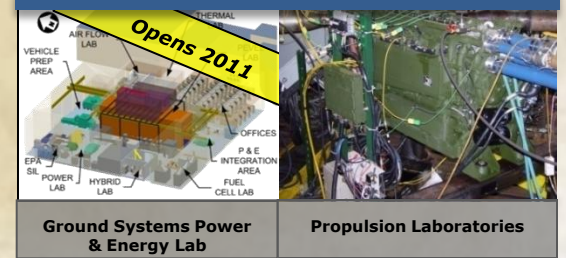
Prototype Integration



Fuels & Lubricants Laboratories



Power & Energy Laboratories



TARDEC's Warren, MI operations has a resource value of over \$950M and occupies 12 facilities on the Detroit Garrison totaling over 840,000 square feet of laboratory space

Advanced Concepting



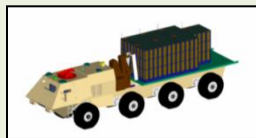
Future Force



JLTV

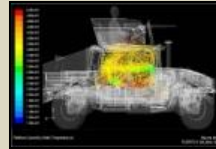


MRAP

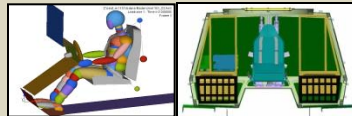


FTTS

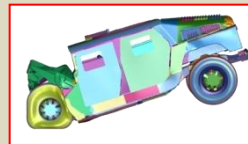
Analytics



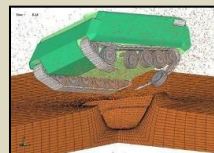
Thermal / CFD



Crew Safety



Structures/Durability



Blast



Dynamics

Hardware & Man-In-The-Loop Simulation



Characterization



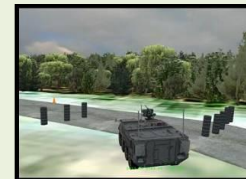
Durability



Turret Testing



Human Dimension



Virtual Environments

Prototype & Demonstrators



FTTS



FED



TWVS

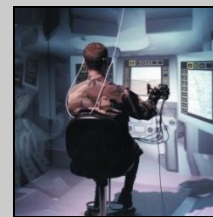


APD

HPC & Data Management



High Performance Computing (HPC)



Computer Aided Virtual Environment (CAVE)



Advanced Collaborative Environment (ACE)

Providing rapid assessment and integration services throughout the Life Cycle of both Technology and System/Platform Development Programs.